TWS AUTOMATION

Versatility and innovative solutions

SMT SYSTEM 2009

TWS AUTOMATION

TWS Automation is a leading Italian manufacturer of assembly lines for SMT boards.

Established in 1997, TWS Automation provides a comprehensive product range covering all the stages of SMT assembling process.

TWS Automation is focused on designing and producing equipment that is simple, hence reliable and easy to maintain. Because of this design philosophy the overall performance of TWS Automation products often outdo that of the more complex and delicate equipment on the market.
Our goal is not just to manufacture first class equipment, but to provide our customers with complete and reliable technical support.

Our official distributor network is ready to give a quick service to our customers all over the world.

Till now TWS Automation has sold about 1000 automated SMT lines throughout Europe, Asia, America and Africa.

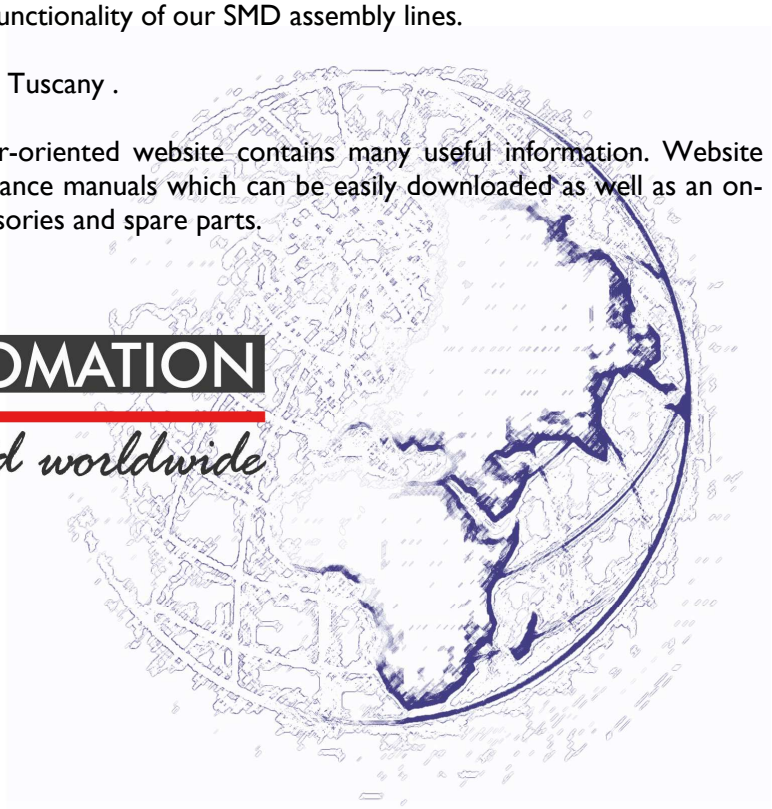
TWS Automation's equipment is also used in house by TWS, another company of the Group, to assemble complex electronic cards needed for its production of navigation instruments.
This big production line that use eight P & P, two ovens, screen printers and other auxiliary equipment is the best test bed for TWS Automation products and is used regularly to demonstrate in a live environment the functionality of our SMD assembly lines.

Head office is located in Carrara, Tuscany .

The TWS Automation customer-oriented website contains many useful information. Website includes user and technical assistance manuals which can be easily downloaded as well as an on-line-shop to buy machines, accessories and spare parts.

TWS AUTOMATION

... distributed worldwide



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TWS
AUTOMATION

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV
=ISO 9001/2000=

PICK & PLACE QUADRA DVC

This new pick and place from TWS Automation represents the seamless evolution of the extremely successful Quadra product line already present in many countries with over 1,000 working units.
While preserving most well tested key solutions of earlier models, the QUADRA *DVC* introduces a worldwide first in this field: the **Linux** operating system.
Linux is a professional Operating System (OS) that sets the QUADRA *DVC* apart from most competing P&P, usually based on Windows, the well known consumer-grade OS.
Contrary to Windows, **Linux,** is approved for mission critical platforms that span aviation, military and space applications.
In more mundane uses **Linux** appears as the de facto standard for Web Internet servers, where its **high reliability** is essential to the continuity of service.
Under total control of the manufacturer, **Linux** is not only a stable OS, non being subject to the Windows's endless sequel of patches and new versions, but it is also virus-free.

TWS Automation has chosen **Linux** for all its range of new products, because it is secure, fast, robust and devoid of the complexity of useless frills, but it provides all the necessary facilities, like USB and connectivity.
The use of an advanced OP has also been instrumental to the introduction of new features and an improved man-machine interface.

NEW FEATURES' SYNOPSIS

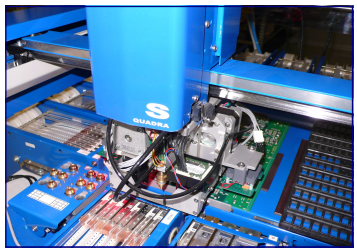
Linux Operating System.

USB support. User data (and software) can be easily and quickly saved or loaded using cheap USB Flash Memory sticks or other mass storage devices.

An innovative **Dynamic Vision Centring** (**DVC**) replaces the Laser centring apparatus with a double telecentric bi-dimensional video camera system offering increased accuracy and control of the position of even the smaller components.

Off-line camera with improved lens system and vision algorithms to centre larger components, BGAs and very fine-pitch ICs.

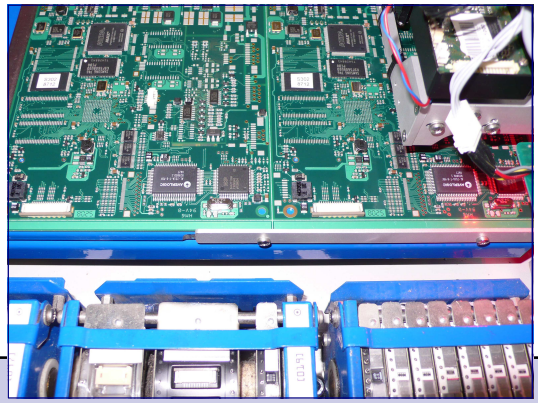
OTHER FEATURES



High numbers of intelligent feeders: the feeders can handle various tapes or stick sizes. New feeders can be prepared off-line in order to reduce downtime for program changeovers. The unit can handle all the main types of components and accommodates **up to 120 feeders** in total, in tape from 8 mm to 44 mm width with 7", 13" or 15" reel diameter.

Dispensing of adhesives and solder paste: The optional dispenser enables easy and rapid dispensing of adhesive and solder paste. The dispenser is simple to set up and achieves over 4000 dots per hour.
An additional volumetric dispenser, not supplied by TWS Automation, could be mounted on the machine.

Quadra DVC is Simple, Reliable and Versatile



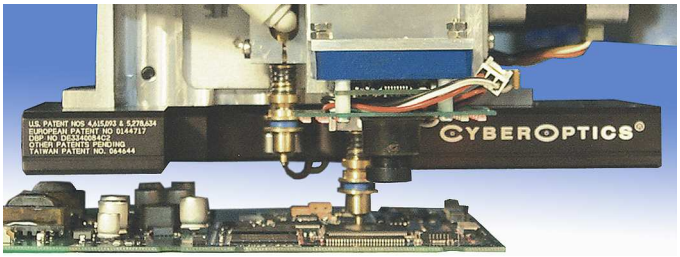
Quadra DVC **(ref. code: UX0PPDVC)**
Quadra DVC with dispenser **(ref. code: UX0PPDVC1)**

TECHNICAL SPECIFICATION

- **Components range:** Chip, Melf, Mini-melf, cylindrical components, transistors, SOT diodes, integrated circuits, PLCC and LCCC integrated circuits, trimmers, inductors, connectors, aluminium electrolytic capacitors.
- **Components size:** from 0402 to 35 mm sq. (Up to 10mm sq. using on-board camera); max height 10.5mm; minimum lead pitch 0.5mm.
- **Placement Area:** 440 x 360 mm. For larger boards, the placement area can be extended by removing feeder magazines on one or two sides of the machine, making the maximum board size 550 x 420 mm.
- **Productivity:** 3300 components per hour. The average productivity is 2700 components per hour.
- **Placement Head:** Dual-spindle camera head with DVC system. The placement head moves along the X and Y axes. Each head is equipped with a vacuum sensor to detect component pick-up failure and to command a new pick-up cycle. Some components may be centred off-line by an external camera.
- **Axes Movement:** Controlled by encoder motors to get higher performance, granting better repeatability and higher life time.
- **Resolution:** 0.02 mm on X and Y axes 0.08° on the Theta axis rotation for head 1, 0.16° for head 2,
- **Repeatability :** ± 0.04 mm on X and Y axes ± 0.16° on Theta axis
- **Accuracy:** ± 0.10 mm on X and Y axes 0.16° on Theta axis rotation
- **Noise:** 65 dBA (average value), measured at 1 meter from the unit and 1.6 meter from the ground.
- **Power Supply:** AC 230Volt ± 10%, 50/60Hz. Power required less than 1 kW.
- **Air: :** 8 –10 bar air @ 60 Lt / min.
- **Dimensions:** 850x1000x1800 mm (Depth x Width x Height). *The machine needs at least 2 square meters area (including the unit itself) to operate correctly.
- **Weight:** 215 kg
- **Packaging:** 960x1200x1650 mm (Depth x Width x Height)
- **Gross weight:** 300 kg

PICK & PLACE QUADRA LASER ENCODER

The TWS Automation Quadra is well known for its flexibility, ease of use and low cost of ownership. Now it is available_with new encoder motors to improve its performance. Repeatability improvement grant better results, increasing efficiency of this pick and place. Over 1000 machines sold in any side of the world testify his success and the Assembly-Industry's appreciation.
The TWS quality/price ratio has revolutionised the concept of surface mount assembly, which was previously considered to be only suitable for large volume manufacturers with large assets.



Unbeatable for small and medium volume manufacturing, the TWS Quadra eliminates the need to sub contract work, thus allowing users to control their quality in-house.
These characteristics have led many customers to expand their production by installing a second and third Quadra rather than looking for a larger machine with higher throughput.

MAIN FEATURES

High numbers of intelligent feeders: the feeders can handle various tapes or stick sizes. New feeders can be prepared off-line in order to reduce downtime for program changeovers. The unit can handle all the main types of components and accommodates **up to 120 feeders** in total, in tape from 8 mm to 44 mm width with 7", 13" or 15" reel diameter.

Automatic fiducial recognition: At the beginning of every assembly cycle, the camera automatically moves to the memorised reference points, searches for their exact position and adjusts the placement positions, for better precision.

Dispensing of adhesives and solder paste: The optional dispenser enables easy and rapid dispensing of adhesive and solder paste. The dispenser is simple to set up and achieves over 4000 dots per hour.
An additional volumetric dispenser, not supplied by TWS Automation, could be mounted on the machine.

Programming modalities: Programming can be performed by several ways as teaching through camera, data loading via CAD file, data entry directly via keyboard **.**

Network connection: Connecting a Quadra to a local network (LAN) allows the user to easily and automatically make a back-up copy of the mounting program onto an external PC. The program and configuration files can be transferred from one machine to another without using external devices such as floppy disks.
Use of the LAN network, also allows the feeder database to be used in conjunction with smart feeders and the information can be shared by all the machines, reducing set-up time.

Centring by vision system: An additional external camera equip machine to accurately centre components. The camera is located at a fixed position on the work area and provides more accurate centring of BGAs, very fine-pitch ICs, large components and similar.

Easy to maintain: all parts of the machine are easy to access and maintain. Maintenance can be carried out by the Operator, who can call our assistance if needed.
The machine is driven by a standard PC. Spare parts are low in cost and always available from stock with a fast turnaround.
Easy to manage: the machine's software uses very simple menus, enabling the operator to gain a high level of confidence in a short time.
The machine comes with a detailed user manual and maintenance guide, and with a practical guide for assembly that includes all stages of production, such as SMD component analysis, solder paste, adhesives, screen printing, soldering, board inspection and verification, repairing and cleaning.
High life time: the simple mechanical design uses no delicate mechanisms, and the Laser has been tested to have a long and reliable life span. The new placement head equipped with laser centring ensures high durability, and high speed of placement.
Cost effective: the machine, having laser centring, has been designed to considerably reduce the capital cost compared to other similar machines currently available. The low cost of the feeders enables users to work with a large feeder inventory to speed up the assembly operation.

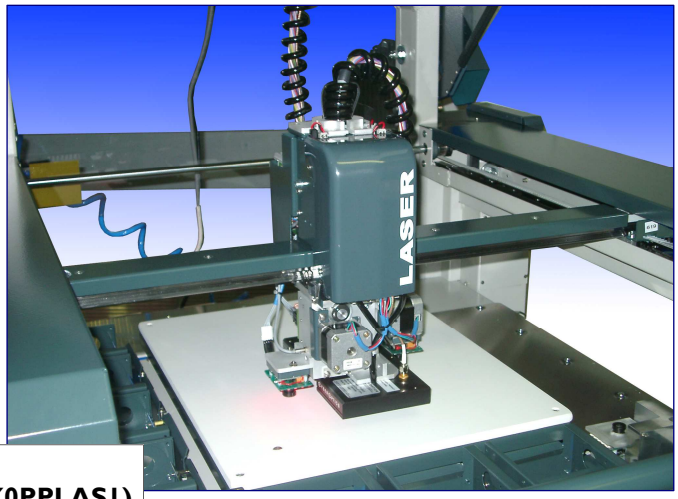
Quadra Laser E **(ref. code: UX0PPLASE)**
Quadra Laser E with dispenser **(ref. code: UX0PPLASE1)**

TECHNICAL SPECIFICATION

- **Components range:** Chip, Melf, Mini-melf, cylindrical components, transistors, SOT diodes, integrated circuits, PLCC and LCCC integrated circuits, trimmers, inductors, connectors, aluminium electrolytic capacitors.
- **Components size:** from 0402 to 35 mm sq.; max height 10,5 mm; minimum lead pitch 0,5mm.
- **Placement Area:** 440 x 360 mm. For larger boards, the placement area can be extended by removing feeder magazines on one or two sides of the machine, making the maximum board size 550 x 420 mm.
- **Productivity:** 3600 components per hour. The average productivity is 3000 components per hour.
- **Placement Head:** Dual-spindle camera head with Laser centring. The placement head moves along the X and Y axes. Each head is equipped with a vacuum sensor to detect component pick-up failure and to command a new pick-up cycle. Some components may be centred off-line by an external camera.
- **Axes Movement:** Controlled by encoder motors to get higher performance, granting better repeatability and higher life time.
- **Resolution:** 0.02 mm on X and Y axes 0.08° on the Theta axis rotation for head 1, 0.16° for head 2,
- **Repeatability :** ± 0.04 mm on X and Y axes ± 0.16° on Theta axis
- **Accuracy:** ± 0.10 mm on X and Y axes 0.16° on Theta axis rotation
- **Noise:** 65 dBA (average value), measured at 1 meter from the unit and 1.6 meter from the ground.
- **Power Supply:** AC 230Volt ± 10%, 50/60Hz. Power required less than 1 kW.
- **Air: :** 8 –10 bar air @ 60 Lt / min.
- **Dimensions:** 850x1000x1800 mm (Depth x Width x Height). *The machine needs at least 2 square meters area (including the unit itself) to operate correctly.
- **Weight:** 215 kg
- **Packaging:** 960x1200x1650 mm (Depth x Width x Height)
- **Gross weight:** 300 kg

PICK & PLACE QUADRA LASER DOUBLE-HEAD AND MONO-HEAD

The TWS Automation Quadra Laser is still available without encoder motors. This classic pick & place has been now released also with a mono-head. All the well known features as flexibility, ease of use and low cost of ownership has been maintained.
Stated all the main features seen in the Laser Encoder model as the **chance to equip machine with up to 120 intelligent feeders**, **dispenser option**, **network connectivity, additional external camera,** etc. TWS Automation has decided to keep this model available in order to give an opportunity of a multiple choice to the customers



Quadra Laser dual-head **(ref. code: UX0PPLAS)**
Quadra Laser dual-head with dispenser **(ref. code: UX0PPLAS1)**

Quadra Laser mono-head with dispenser **(ref. code: UX0PPCUS)**

TECHNICAL SPECIFICATION

- **Components range:** Chip, Melf, Mini-melf, cylindrical components, transistors, SOT diodes, integrated circuits, PLCC and LCCC integrated circuits, trimmers, inductors, connectors, aluminium electrolytic capacitors.
- **Components size:** from 0402 to 35 mm sq.; max height 10,5 mm; minimum lead pitch 0,5mm.
- **Placement Area:** 440 x 360 mm. For larger boards, the placement area can be extended by removing feeder magazines on one or two sides of the machine, making the maximum board size 550 x 420 mm.
- **Productivity dual-head:** 3600 components per hour. The average productivity is 3000 cph.
- **Productivity mono-head:** 2800 components per hour. The average productivity is 2000 cph.
- **Placement Head:** Dual-spindle or single-spindle camera head(s) with Laser centring. The placement head moves along the X and Y axes. Each head is equipped with a vacuum sensor to detect component pick-up failure and to command a new pick-up cycle. Some components may be centred off-line by an external camera.
- **Axes Movement:** Stepper motor is driven by a controlled gradient, allowing the head motion to accelerate and slow down at the starting and stopping points
- **Resolution:** 0.02 mm on X and Y axes 0.08° on the Theta axis rotation for head 1, 0.16° for head 2,
- **Repeatability :** ± 0.06 mm on X and Y axes ± 0.16° on Theta axis
- **Accuracy:** ± 0.10 mm on X and Y axes 0.16° on Theta axis rotation
- **Noise:** 65 dBA (average value), measured at 1 meter from the unit and 1.6 meter from the ground.
- **Power Supply:** AC 230Volt ± 10%, 50/60Hz. Power required less than 1 kW.
- **Air: :** 8 –10 bar air @ 60 Lt / min.
- **Dimensions:** 850x1000x1800 mm (Depth x Width x Height). *The machine needs at least 2 square meters area (including the unit itself) to operate correctly.
- **Weight:** 215 kg
- **Packaging:** 960x1200x1650 mm (Depth x Width x Height)
- **Gross weight:** 300 kg

FEEDER BANKS MOD.608 (TAPES) AND MOD.808 (STICKS)

REF. CODE: KAPPLC6080

Tape feeder bank model 608

The new smart feeder banks increase their performance: new motor, new belt to improve their reliability, new recognition system through a new electronic control. The feeders are organised in banks which can accommodate up to eight reels. This dramatically reduces both costs and set-up time.

The feeder banks are configurable. The operator may decide at any time to change the combination of tape sizes. For instance, three 8mm tapes can be replaced with two 12mm tapes or one 16mm plus one 8mm tape. The feeder banks can be thus configured to suit individual requirements. Feeder sets are available for virtually every kind of tape on the market.

Reels can be replaced easily and quickly.

The work principle is very simple and reliable, tested on thousands of feeder banks already sold. No maintenance is needed.

REF. CODE: KAPPLC8080

Stick feeder bank model 808

Stick feeders are also organised in similar feeder banks able to accommodate up to six tubes, retaining the advantages of low cost and fast set-up speed.

Stick feeder sets for virtually any kind of component and any kind of tube are held in stock. Sets that are not in our catalogue can be custom made in a short time.

The stick feeders work by using a gentle pulse of compressed air which moves the components along the tube to the pick-up position. This is more reliable than using vibration feeders.

The low cost of the feeders banks allows the user to keep a high number in stock, dedicating their use to a specific board or to different customer's boards.

TECHNICAL SPECIFICATION

- **608 feeder bank dimension:** 280x610x100 mm **(**Depth x Width x Height)
- **Net weight:** 4 kg
- **808 feeder bank dimension:** 150x650x105 mm **(**Depth x Width x Height)
- **Net weight:** 3 Kg
- **Packaging:** 360x770x150 mm (Depth x Width x Height)
- **608 gross weight:** 5 kg
- **808 gross weight:** 4 kg

PICK & PLACE QUADRA BASIC

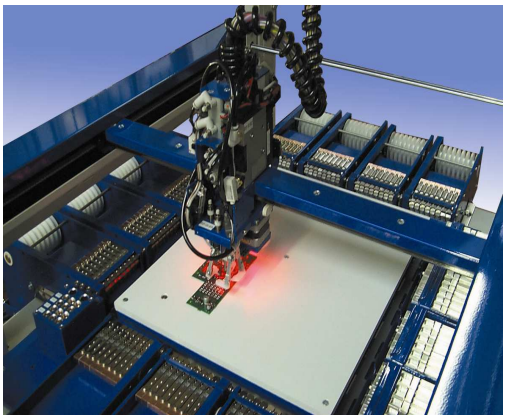
The TWS Automation Quadra is suitable for prototype and/or for small to medium sized manufacturing batches, representing a lower cost option in the TWS Automation Pick & Place range.
The Quadra Pick & Place machine is supplied with a dual spindle mechanical centring head where the centring is carried out by means of 4 lightweight jaws and if requested, can be equipped with a dispenser for adhesives and solder paste.
The machine accommodates up to 120 feeders in total, in tapes from 8 mm to 44 mm width, 7" , 13" or 15" reel diameter and any kind of stick and tray.

The most important features are:

Cost effective: the machine, having mechanical centring, has been designed to considerably reduce the capital equipment cost compared to other similar machines currently available. The low cost of the feeders enables users to work with a large feeder inventory to speed up the assembly operation.

High durability: the simple mechanical design uses no delicate mechanisms, and the Quadra has been tested to have a long and reliable life span.

Easy to manage: the machine's software uses very simple menus, enabling the operator to gain a high level of confidence in a short time.
The machine comes with a detailed user manual and maintenance guide, and with a practical guide for assembly that includes all stages of production, such as SMD component analysis, solder paste, adhesives, screen printing, soldering, board inspection and verification, repairing and cleaning.



Easy to maintain: all parts of the machine are easy to access and maintain. Maintenance can be carried out by the Operator, who can, if required, call upon our assistance if needed.
The machine is driven by an industry standard PC. Spare parts are low in cost and always available from stock with a fast turnaround.
An integrated system provides diagnostics for testing and measuring power absorption of the boards inside the machine. The integral CPU also controls the machine I/O's such as vacuum, electro-magnets, laser centring, axis movement and status of the limit switches.

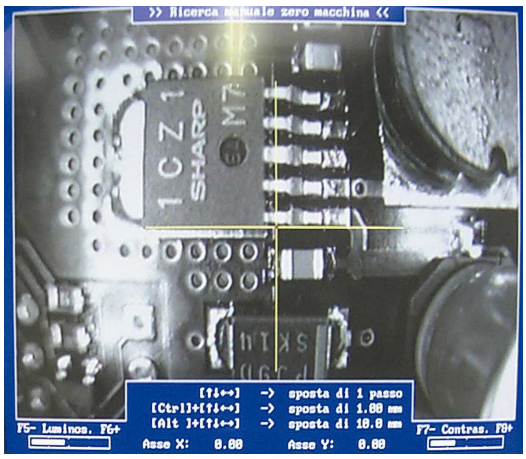
Quick feeder changeover: the feeders can handle various tapes or stick sizes.
New feeders can be prepared off-line in order to reduce downtime for program changeovers.

High numbers of feeders: The unit can handle all the main types of components and accommodates up to 120 feeders in total, in tape from 8 mm to 44 mm width with 7", 13" or 15" reel diameter.
A catalogue is available for stick components. IC lanes for components not listed in the catalogue may be prepared in a short time.

Programming modalities: Programming can be performed by several ways as teaching through camera, data loading via CAD file, data entry directly via keyboard **.**

Automatic fiducial recognition: At the beginning of every assembly cycle, the camera automatically moves to the memorised reference points, searches for their exact position and adjusts the placement positions, for better precision.

Dispensing of adhesives and solder paste: The optional dispenser enables easy and rapid dispensing of adhesive and solder paste. The dispenser is simple to set up and achieves over 4000 dots per hour.
An additional volumetric dispenser, not supplied by TWS Automation, could be mounted on the machine.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[Ctrl]+[↑↓←→] -> sposta di 1.00 mm
[Alt]+[↑↓←→] -> sposta di 10.0 mm
F5- Lumins. F6+
Asse X: 0.00
Asse Y: 0.00
F7- Contras. F8+

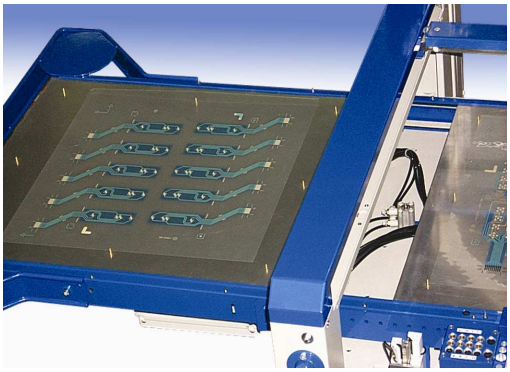
Quadra Basic **(ref. code: UX0PPLQ0XX)**
Quadra Basic with dispenser **(ref. code: UX0PPLQDIS)**

TECHNICAL SPECIFICATION

- **Components size and type:** The unit can mount chip components from 0603, Melf, Mini-melf, cylindrical components, Sot transistors, diodes, integrated circuits with 0.8 mm pitch (31.5 mil) up to 35 mm, PLCC and LCCC integrated circuits up to 35 mm, trimmers, inductors, connectors, aluminium electrolytic capacitors up to 10.5 mm high.
- **Placement Area:** 440 x 360 mm. For larger boards, the placement area can be extended by removing feeder magazines on one or two sides of the machine, making the maximum board size 550 x 420 mm.
- **Productivity:** 3400 components per hour. The average productivity is 2800 components per hour.
- **Placement Head:** The unit is supplied with a dual-spindle mechanical centring head where the centring is by means of 4 jaws. The placement head moves along the X and Y axes. Each head is equipped with a vacuum sensor to detect component pick-up failure and to command a new pick-up cycle.
- **Axes Movement:** Stepper motors driven by a controlled gradient, allowing the head motion to accelerate and slow down at the starting and stopping points.
- **Resolution:** 0.02 mm on X and Y axes 0.45° on the Theta axis rotation.
- **Repeatability :** ± 0.12 mm on X and Y axes ± 0.45° on Theta axis
- **Accuracy:** ± 0.20 mm on X and Y axes 0.90° on Theta axis rotation
- **Noise:** 65 dBA (average value), measured at 1 meter from the unit and 1.6 meter from the ground.
- **Power Supply:** AC 230Volt ± 10%, 50/60Hz. Power required less than 1 kW.
- **Air: :** 8 –10 bar air @ 60 Lt / min.
- **Dimensions:** 850x1000x1800 mm (Depth x Width x Height). *The machine needs at least 2 square meters area (including the unit itself) to operate correctly.
- **Weight:** 215 kg
- **Packaging:** 960x1200x1650 mm (Depth x Width x Height)
- **Gross weight:** 300 kg

PICK & PLACE QUADRA MEMBRANE

This Pick & Place Quadra for Membrane Keyboards has been designed for placing SMD components, LEDs and metal domes (in tube and in reels) onto membrane keyboards. Five models are available. This machine can also be used for dispensing glue and paste using two syringes. Main features, depending on the configuration, of this special application are:



CONVEYOR AND PALLET SYSTEM: If the Quadra is equipped with conveyor, the flexible keyboards are assembled on a rigid support (pallet) that is handled by the conveyor.

FIXED VACUUM WORKING PLATE: In this format, flexible keyboards are placed on a fixed vacuum plate.

DISPENSER: As an option, two dispensing systems can be used together: one is a time-pressure dispenser, and the second one could be a volumetric dispenser. A separate pipe for compressed air supplies each syringe. This pipe is added to the head wire harness and is connected to a separate air pressure regulator, with a pressure gauge.

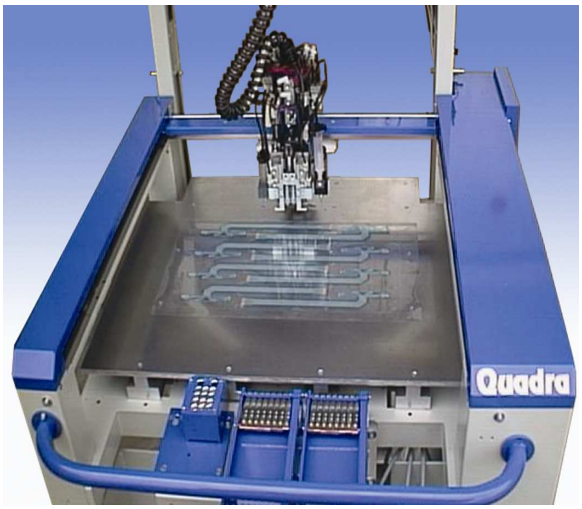
FEEDERS: The machine can accommodate two special feeders for metal domes in stick and two feeder banks for components (stick or tape). These two feeder banks will place metal domes in reels.
Using the special feeder for metal domes in sticks, the stack of domes is pushed upward by a motor driven screw, and an opto-electronic sensor stops the motor when it detects the presence of the stack of domes.

Quadra Membrane models:

REF. CODE: UX0PPLQCU1
Configured with vacuum workplate and double dispenser set units: one time/pressure dispenser + adaptor for volumetric dispenser (not supplied)

REF. CODE: UX0PPLQCU2
Configured with a stand alone conveyor system and one time-pressure dispenser

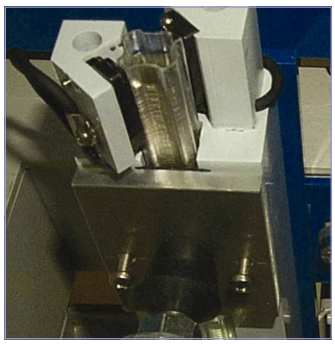
REF. CODE: UX0PPLQCU3
Configured with vacuum workplate and one time-pressure dispenser

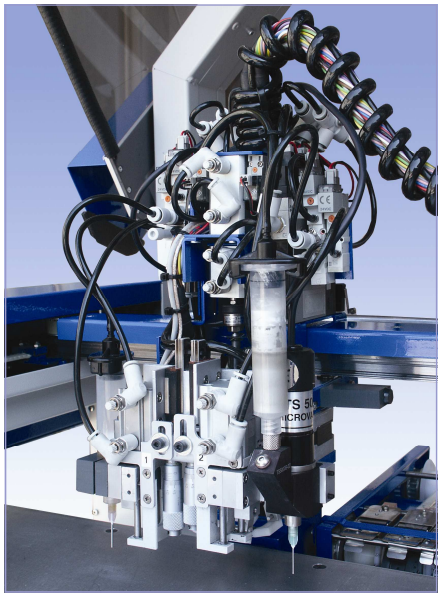


REF. CODE: UX0PPLQCU4
Configured with vacuum workplate and two time-pressure dispensing units with anti-drop system

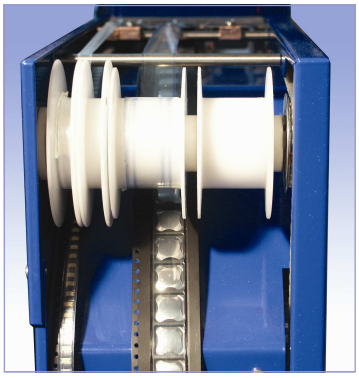
REF. CODE: UX0PPLQCU5
Configured with vacuum workplate and two removable dispenser sets: one with a single dispensing unit (time-pressure) and one with double dispensing unit (time-pressure) with anti-drop system. They can work alternately.

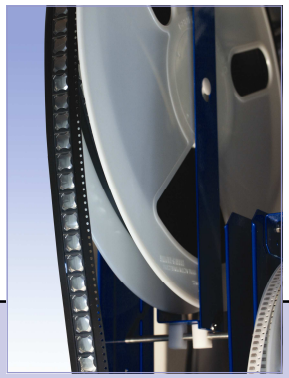
Feeders:





REF. CODE: KAPPLCCUPO
Feeder for metal domes in tube
REF. CODE: KAPPLC6080
Feeder bank for components and/or metal domes in tape





TECHNICAL SPECIFICATION

- **Components size and type:** The unit can mount chip components from 0603, Melf, Mini-melf, cylindrical components, Sot transistors, diodes, integrated circuits with 0.8 mm pitch (31.5 mil) up to 35 mm, PLCC and LCCC integrated circuits up to 35 mm, trimmers, inductors, connectors, aluminium electrolytic capacitors up to 10.5 mm high.
- **Placement Area:** 440 x 360 mm. For larger boards, the placement area can be extended by removing feeder magazines on one or two sides of the machine, making the maximum board size 550 x 420 mm.
- **Productivity:** 3400 components per hour. The average productivity is 2800 components per hour.
- **Placement Head:** The unit is supplied with a dual-spindle mechanical centring head where the centring is by means of 4 jaws. The placement head moves along the X and Y axes. Each head is equipped with a vacuum sensor to detect component pick-up failure and to command a new pick-up cycle.
- **Axes Movement:** Stepper motors driven by a controlled gradient, allowing the head motion to accelerate and slow down at the starting and stopping points.
- **Resolution:** 0.02 mm on X and Y axes 0.45° on the Theta axis rotation.
- **Repeatability :** ± 0.12 mm on X and Y axes ± 0.45° on Theta axis
- **Accuracy:** ± 0.20 mm on X and Y axes 0.90° on Theta axis rotation
- **Noise:** 65 dBA (average value), measured at 1 meter from the unit and 1.6 meter from the ground.
- **Power Supply:** AC 230Volt ± 10%, 50/60Hz. Power required less than 1 kW.
- **Air: :** 8 –10 bar air @ 60 Lt / min.
- **Dimensions:** 850x1000x1800 mm (Depth x Width x Height). *The machine needs at least 2 square meters area (including the unit itself) to operate correctly.
- **Weight:** 215 kg
- **Packaging:** 960x1200x1650 mm (Depth x Width x Height)
- **Gross weight:** 300 kg
- **Packaging for conveyor:** 820x2150x250 mm (Depth x Width x Height)
- **Gross weight:** 75 kg

REFLOW OVEN TWS1400

Ref. code: UXOTWS1400 mesh conveyor
Ref. code: UXOTWS1401 chain conveyor

The TWS 1400 is a 10 zone, full convection reflow oven with an outstanding quality-price ratio.
It is 4 metres long, with a tunnel length of 3 metres. This length provides excellent performance, a controlled soldering profile, high productivity and low power consumption. It is also extremely easy to use.
The TWS 1400 is divided into five upper heating zones and five lower heating zones. Eight zones are for preheating and two for reflow.
The convection is achieved by means of a turbulent flow of hot air generated by carefully placed lateral fans.
The air temperature is controlled by a fast digital PID loop with high stability K thermocouples placed in each zone. The 10 zones are controlled by ten set-point values which can be individually set by the user.
The oven is equipped with a temperature recorder. The soldering graph can be monitored through the oven LCD or by connecting the oven to an external PC. In this case the graph can be saved and printed out.

The ten heating zones and the digital adjustment of the conveyor speed provide great flexibility. Up to 14 programs can be saved and quickly downloaded.

The heating elements are controlled by a PID regulator utilizing Burst Firing commutation, making the oven fully compliant with the EMI standards.

The oven's main parameters are constantly monitored by a 10" LCD colour display, showing:

- Temperature set-point, for each heating zone
- Actual temperature, for each heating zone
- Conveyor speed set-point
- Actual speed of the conveyor
- Staggered activation of the zones in order to reduce power consumption during start-up.

ALSO SOLDERING LEAD-FREE

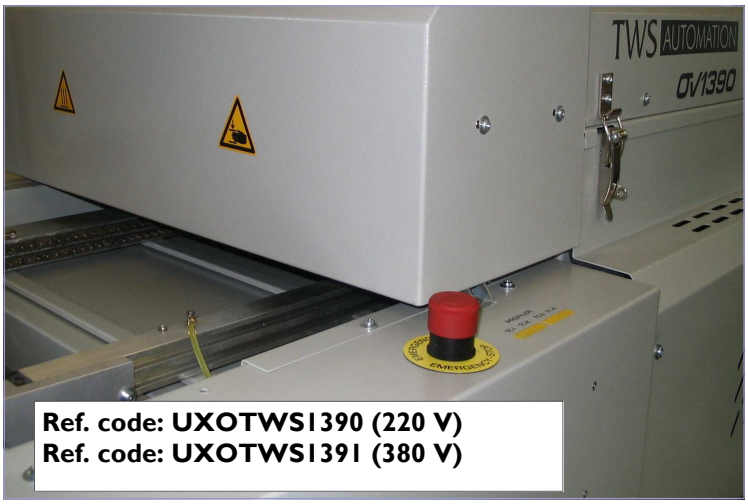
TECHNICAL SPECIFICATION

- **Components belt width:** 400 mm
- **Conveyor chain width**: 55mm min, 360mm max
- **Conveyor height:** adjustable from 37" to 38"
- **Conveyor speed mm/minute:** Min 300; Max 700
- **Maximum component height:** 35 mm
- **Maximum temperature differential between adjacent zones:** 110°
- **Max reflow temperature:** 320°C
- **Maximum power consumption:** 20 kW

- **Average power consumption:** 7/8 kW
- **Heating zones:** 10
- **Cooling zone:** 1
- **Power supply:** 400 Volt
- **Dimensions:** 4065x1135x1365 mm. (Depth x Width x Height)
- **Net weight:** 680 Kg
- **Packaging:** 4160x1230x1640 mm. (Depth x Width x Height)
- **Gross weight:** 880 kg

REFLOW OVEN TWS1390

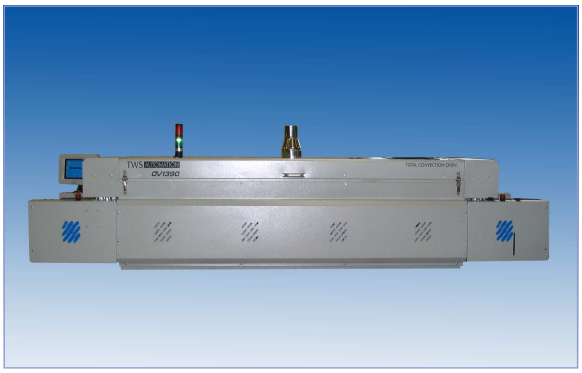
The TWS 1390 is a new medium-size convection ovens from TWS Automation. The oven is 3 metres long (with a 2 metres tunnel) and produce a very good soldering profile, together with high productivity with low power consumption. It is also very easy to use.
The TWS 1390 is divided into four heating zones, three for preheating and one for reflow.
The air convection is directed horizontally by fans that blow the air from the centre of the zone to the surroundings.
The board cooling is obtained by forced convection of air at room temperature caused by an horizontal fan, its speed can be manually adjusted by a knob.



Ref. code: UXOTWS1390 (220 V)
Ref. code: UXOTWS1391 (380 V)

The board temperature is gradually lowered to minimise the thermal shock to the board and the components when exiting the oven, respecting parameters given by solder paste's manufacturer.
The upper part of the soldering tunnel has a flip-opening system that enables an immediate inspection and cleaning.
The air temperature is controlled by a microprocessor through K-type thermocouples placed in each zone, that keeps the temperature between tight limits.
To obtain the best soldering performance, the oven is equipped with a temperature recorder which can be connected to a PC to display the temperature profiles during the soldering process.

The TWS1390 oven is equipped with a solid aluminium structure driving an adjustable stainless chain.
Lubrification is given by the means of an oil system which can be controlled by the oven software. Keeping the conveyor well oiled means a longer lifespan.
The conveyor movement is powered by a DC gear motor with encoder, and its speed can be changed through the software. A current sensing system blocks the motor if an excessive force is detected or in case of malfunctioning.



It can be equipped with a support bench sold as optional. **(ref. code: UO1380180)**

ALSO SOLDERING LEAD-FREE

TECHNICAL SPECIFICATION

- **Conveyor chain width**: 62mm min, 285mm max
- **Conveyor height:** adjustable from 37" to 38"
- **Conveyor speed mm/minute:** Min 75; Max 500
- **Maximum component height:** 35 mm
- **Maximum temperature differential between adjacent zones:** 110°
- **Max temp. settings:** 300°C (zone1, zone 2, zone 3): 350°C (zone 4)
- **Maximum power consumption:** 11 kW

- **Average power consumption:** 4 kW
- **Heating zones:** 4
- **Cooling zone:** 1
- **Power supply:** 230 Volt or 400 Volt
- **Dimensions:** 800x3060x600 mm. (Depth x Width x Height)
- **Net weight:** 310 Kg
- **Packaging:** 880x3200x900 mm. (Depth x Width x Height)
- **Gross weight:** 430 kg

REFLOW OVEN TWS1380

Ref. code: UXOTWS1380 (220 V)
Ref. code: UXOTWS1381 (380 V)

The TWS 1380 is 3 metres long (with a 2 metres tunnel) and produces a very good soldering profile, together with high productivity with low power consumption. It is also very easy to use.

The TWS 1380 is divided into four heating zones, three for preheating and one for reflow. The air convection is directed horizontally by fans that blow the air from the centre of the zone to the surroundings. The window in the hood of the machine enables the user to observe the reflow process in real time, giving useful indications and allowing for thermal profile fine-tuning without using the recorder. The upper part of the soldering tunnel has a flip-opening system that enables an immediate inspection and cleaning.
The air temperature is controlled by a microprocessor through K-type thermocouples placed in each zone, that keeps the temperature between tight limits.
The cooling zone is optimised to lower the temperature to the required level without causing unwanted thermal shocks either to soldering joints or to components.
To obtain the best soldering performance, the oven is equipped with a temperature recorder which can be connected to a PC to display the temperature profiles during the soldering process.
A great variety of thermal profiles can be obtained (to fulfil even the most complex demands) thanks to its four heating zones and the digital adjustment of the conveyor speed. Up to 14 programs can be stored and quickly downloaded. The heating elements are controlled by a PID regulator using Burst Firing commutation, complying to EMI standards.
The ovens' main parameters, which are constantly monitored by a microprocessor connected to the LCD colour display, shows:

- Temperature set point, for each heating zone
- Actual temperature, for each heating zone
- Conveyor speed set point
- Actual speed of the conveyor

Other features

-Delayed connection of the zone in order to reduce power consumption during the zone heating.
-In the event of a power failure, a back up battery enables the conveyor to continue running until all boards have exited the machine.
It can be equipped with a support bench sold as optional. **(ref. code: UO1380180)**

ALSO SOLDERING LEAD-FREE

TECHNICAL SPECIFICATION

- **Conveyor belt width**: 400 mm
- **Conveyor height:** adjustable from 37" to 38"
- **Conveyor speed mm/minute:** Min 75; Max 500
- **Maximum component height:** 35 mm
- **Maximum temperature differential between adjacent zones:** 110°
- **Max temp. settings:** 300°C (zone1, zone 2, zone 3): 350°C (zone 4)
- **Maximum power consumption:** 11 kW
- **Average power consumption:** 4 kW
- **Heating zones:** 4
- **Cooling zone:** 1
- **Power supply:** 230 Volt or 400 Volt
- **Dimensions:** 800x3000x600 mm. (Depth x Width x Height)
- **Net weight:** 275 Kg
- **Packaging:** 880x3110x900 mm. (Depth x Width x Height)
- **Gross weight:** 400 kg

REFLOW OVEN TWS1320

The TWS 1320 convection oven is a full forced air convection oven complementing the whole range of our reflow systems. It is a four zones oven capable of soldering boards up to 400mm in width. A great variety of thermal profiles can be obtained (to fulfil even the most complex demands) due to their four heating zones and the digital adjustment of the conveyor speed.

Ref. code: UXOTWS1320 (220 V)
Ref. code: UXOTWS1321 (380 V)

The air temperature is controlled by a microprocessor through K-type thermocouples placed in each zone, that keeps the temperature between tight limits.
The cooling zone is optimised to lower the temperature to the required level without causing unwanted thermal shocks either to soldering joints or to components

The heating elements are controlled by a PID regulator utilizing Burst Firing commutation, complying to EMI standards.

The ovens' main parameters, which are constantly monitored by a microprocessor connected to the PC LCD display, shows:

- Temperature set point, for each heating zone
- Actual temperature, for each heating zone
- Conveyor speed set point
- Actual speed of the conveyor

Other functions are:

-Delayed connection of the zone in order to reduce power consumption during the zone heating.
-In the event of a power failure, a back up battery enables the conveyor to continue running until all boards have exited the machine.

One upper windows on the machine allows the user to observe the reflow process in real time.

A support bench for the oven is also available **(ref. code: UO1380180)**

ALSO SOLDERING LEAD-FREE

TECHNICAL SPECIFICATION

- **Conveyor belt width**: 400 mm
- **Conveyor height:** adjustable from 37" to 38"
- **Conveyor speed mm/minute:** Min 75; Max 500
- **Maximum component height:** 35 mm
- **Maximum temperature differential between adjacent zones:** 110°
- **Max temp. settings:** 300°C (zone1, zone 2, zone 3): 350°C (zone 4)
- **Maximum power consumption:** 11 kW

- **Average power consumption:** 4 kW
- **Heating zones:** 4
- **Cooling zone:** 1
- **Power supply:** 230 Volt or 400 Volt
- **Dimensions:** 800x3000x600 mm. (Depth x Width x Height)
- **Net weight:** 265 Kg
- **Packaging:** 880x3110x900 mm. (Depth x Width x Height)
- **Gross weight:** 385 kg

REFLOW OVEN TWS1250

The TWS 1250 is 2.5 metres long (with a 1.5 metres tunnel) which produces a very good soldering profile, together with high productivity with low power consumption. It is also very easy to use.

The TWS 1250 is divided into three heating zones, two for preheating and one for reflow.
The air convection is directed horizontally by fans that blow the air from the centre of the zone to the surroundings.

The cooling zone is optimised to lower the temperature to the required level without causing unwanted thermal shocks either to soldering joints or to components.

Ref. code: UXOTWS1250 (220 V)
Ref. code: UXOTWS1251 (380 V)

The window in the hood of the machine enables the user to observe the reflow process in real time, giving useful indications and allowing for thermal profile fine-tuning without using the recorder. The upper part of the soldering tunnel has a flip-opening system that enables an immediate inspection and cleaning.

The air temperature is controlled by a microprocessor through K-type thermocouples placed in each zone, that keeps the temperature between tight limits.
A great variety of thermal profiles can be obtained (to fulfil even the most complex demands) due to its three heating zones and the digital adjustment of the conveyor speed. Up to 14 programs can be stored and quickly downloaded. The heating elements are controlled by a PID regulator using Burst Firing commutation, complying to EMI standards.

The oven's main parameters, which are constantly monitored by a microprocessor connected to the LCD monochrome display, shows:

- Temperature set point, for each heating zone
- Actual temperature, for each heating zone
- Conveyor speed set point
- Actual speed of the conveyor

Delayed connection of the zone in order to reduce power consumption during the zone heating.
A support bench for the oven is also available **(ref. code: UO1250180)**

ALSO SOLDERING LEAD-FREE

TECHNICAL SPECIFICATION

- **Conveyor belt width**: 400 mm
- **Conveyor height:** adjustable from 37" to 38"
- **Conveyor speed mm/minute:** Min 75; Max 500
- **Maximum component height:** 35 mm
- **Maximum temperature differential between adjacent zones:** 110°
- **Max temp. settings:** 300°C (zone1, zone 2); 350°C (zone 3)
- **Maximum power consumption:** 11 kW

- **Average power consumption:** 4 kW
- **Heating zones:** 3
- **Cooling zone:** 1
- **Power supply:** 230 Volt or 400 Volt
- **Dimensions:** 800x2500x600 mm. (Depth x Width x Height)
- **Net weight:** 205 Kg
- **Packaging:** 880x2620x900 mm. (Depth x Width x Height)
- **Gross weight:** 290 kg

REFLOW OVEN TWS1150

The TWS 1150 is a full forced air convection oven with 2 heating zones capable of soldering boards up to 400 mm in width.
Performance has been increased thanks to new material and new powered insulating system.
This oven grants very good performances, an ideal soldering profile, low power consumption, high productivity and easy-of-use. With the oven operating at just 50 deg above the reflow temperature, it allows the boards to remain in the oven longer, without causing thermal shock..
For this reason the process window is increased making profiling far easier and a wider variety of boards to be soldered with little adjustment to the profile.

The cooling zone is optimised to lower the temperature to the required level without causing unwanted thermal shocks either to soldering joints or to components.
The air temperature is controlled by a K type thermocouples placed in each zone.
The possibility of independently adjusting the temperature in each zone let you obtain several different temperature profiles, so as to meet the most demanding requirements. The control computer will store up to fourteen profiles, which can be quickly downloaded from the *File page*.
The heating units are controlled by a PID system with "*Burst firing*" technique , for EMI suppression. "PID" algorithm ensures a faster temperatures adjustment of the two zones.

The main parameters of the oven are constantly monitored by the LCD display of the computer, showing:

- Temperature set-point, for each heating zone
- Actual temperature, for each heating zone
- Belt speed set-point
- Actual speed of the conveyor/belt

In case of power cut, a pad-battery ensures the transport of the boards out of the heating tunnel.

A support bench for the oven is also available **(ref. code: UO1250180)**

Ref. code: UXOTWS1150 (220 V)
Ref. code: UXOTWS1151 (380 V)

ALSO SOLDERING LEAD-FREE

TECHNICAL SPECIFICATION

- **Conveyor belt width**: 400 mm
- **Conveyor height:** adjustable from 37" to 38"
- **Conveyor speed mm/minute:** Min 75; Max 500
- **Maximum component height:** 35 mm
- **Maximum temperature differential between adjacent zones:** 110°
- **Max temp. settings:** 300°C (zone1); 350°C (zone 2)
- **Maximum power consumption:** 7 kW
- **Average power consumption:** 3 kW
- **Heating zones:** 2
- **Cooling zone:** 1
- **Power supply:** 230 Volt or 400 Volt
- **Dimensions:** 800x2000x600 mm. (Depth x Width x Height)
- **Net weight:** 167 Kg
- **Packaging:** 880x2050x900 mm. (Depth x Width x Height)
- **Gross weight:** 230 kg

REFLOW OVEN TWS850 / TWS850N2

TWS 850 / 850N2 is a powerful and compact reflow and convection oven with one heating zone ideal to perform soldering operation for small to prototype size SMT manufacturing, to cure adhesive and pastes and to remove humidity from fine pitch parts prior to reflow using Hot Bake function.
The oven enables to solder boards up to 330 mm length and 240 mm widht.
Heating of the board is obtained by forced convection of hot air, a well-proven system, giving the best compromise among quality, productivity, consumption and dimensions.
Easy to use and with good performance, TWS 850 / 850N2 is a cheaper oven who allows to do solder operation in a really short time.
Even if able to solder very large boards, the oven structure has been design to be a bench-top type, to install it easily even in narrow spaces and thus is ideal for laboratories.
The electronic control system is designed to minimise power consumption.
Even if is a small oven it is possible to obtain a great variety of thermal profiles so as to fulfil the most demanding request.

Ref. code: UXOTWS0850 (TWS850)
Ref. code: UXOTWS0851 (TWS850N2)

The oven's main parameters are constantly monitored by the Touch screen LCD display , always indicating the instruction for the operator and following parameters:

- Temperature set-point for each heating phase,
- Actual temperature for each heating phase.

The forced convection of air is on horizontal line, this due to a fan that blows the air from the inside to the surroundings. The air flux is calculated to not shift those components from their original position.
The actual temperature of the heater is monitored by computer and a built-in K-type thermocouple.

Also manufactured in Nitrogen version:
In this model (with nitrogen) oven has the function to solder in a controlled atmosphere. It is possible to set the parameters to regulate the quantity of nitrogen inside the heating zone. Once selected the "Nitrogen" function, there are further settings more than time and temperature during pre-eating.

ALSO SOLDERING LEAD-FREE

TECHNICAL SPECIFICATION

- **Power supply:** 230 Volt
- **Maximum power consumption:** 4.5 kW/5 kW (Nitrogen model)
- **Compressed air supply:** 3 bar (only for Nitrogen model)
- **Heating zones:** 1
- **Max reflow temperature:** 260°C
- **PCB max dimension:** 330x240 mm
- **Dimensions:** 710x640x410 mm. (Depth x Width x Height)
- **Net weight:** 25 Kg
- **Packaging:** 830x820x530 mm. (Depth x Width x Height)
- **Gross weight:** 38 kg

THERMAL PROFILER RT-03

The temperature profile recorder RT-03 is a useful accessory for fine-tuning the SMT soldering process.

It enables the user to improve the setting of the oven parameters, to optimise production and to check the soldering process quality, by just looking at the temperature vs. time graph.

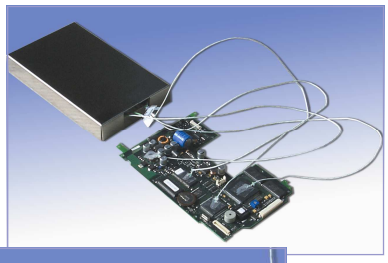
The device uses four K-type Ni-Cr-Ni micro thermocouples to obtain accurate measurements and high-speed responses.

Recording is started and stopped by a manual switch. The maximum duration of recording is 54 minutes, after that time it stops automatically. Of course, in real time, with the profiler connected to a Pc you will be able to record and visualize profiles data for a longer time (about 5 hours).

Its small size and compact body makes it an easy-to-use device, suitable for any type of oven.

The software is developed for any Windows system from 95 version onwards. The software manages the communication with the recorder and displays the graph of temperature versus time on the PC monitor using a different colour for each channel. It also provides the following data processing:

- display of thermal gradient, calculating the speed of temperature changes in Celsius degrees per second
- display of three-dimensional temperature graphic
- zooming-in part of the graph, to highlight the most interesting parts
- hard copy of the graphs
- profiles data storage on hard disk.



As option are available the following thermocouples:
Type K thermocouple 3000 mm length **(ref. code: TERRT1300K)**
Type K thermocouple 4000 mm length **(ref. code: TERRT1400K)**
Type K thermocouple 10000 mm length **(ref. code: TERRT1000K)**

TECHNICAL SPECIFICATION

- **Power supply:** AC Adapter, 7.2 V 500mA (included)
- **Working voltage:** 7.2 Volt-DC
- **Input:** 4 channels with thermocouples
- **Thermocouples length:** 500 mm (included)
- **Accuracy:** ± 2 °C (at 100 °C)

- **Battery operation:** about 4 hours
- **Recording time:** 54 minutes max
- **Dimensions:** 340x510x200mm. (Depth x Width x Height)
- **Net weight:** 3,5 Kg
- **Packaging:** 350x520x210mm. (Depth x Width x Height)
- **Gross weight:** 4 kg

SCREEN PRINTER SR3100

The SR 3100 is the first model of a new generation of fully automatic printers manufactured by TWS Automation.
A new user-friendly **LINUX** based control software, totally virus free, combined with an high resolution vision system enables the operator to reduce set-up time and gives high precision and repeatability in the printing process. It is extremely easy to use: all the alignment steps between board and frame are totally automatic and operator can check the whole process through an on-board LCD screen.
The innovative double loading system makes the production faster , thanks to the versatility of loading the machine on both sides: operator is able to load a new board while the machine is working to maximize throughput.
Motorised snap-off and a very large printing area give to this machine features of great flexibility and productivity.
A solid and compact structure reduce the space necessary to place machine, giving great stability.

A vacuum system to hold the board is available.

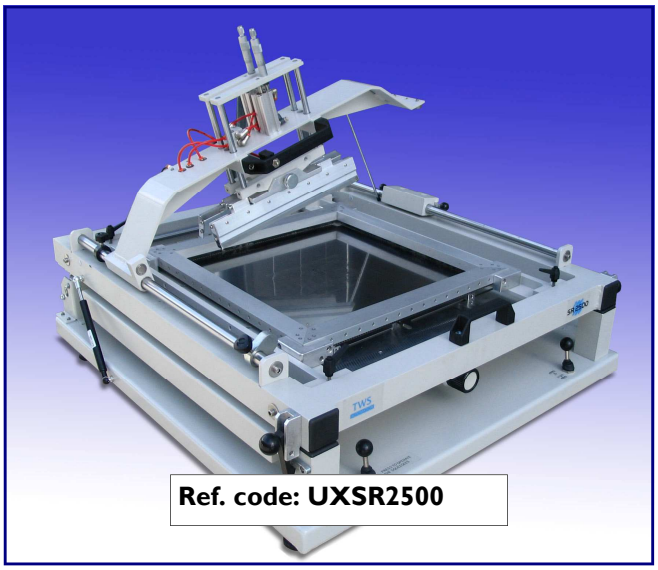
Machine is equipped with 250 mm squeegees as default.

Ref. code: UXSR3100

TECHNICAL SPECIFICATION

- **Print area:** 440x440 mm.
- **Maximum frame size:** 670x700 mm
- **Maximum PCB thickness:** 6 mm
- **Printing cycle:** Programmable
- **Squeegees:** Two independent, self levelling, pressure controlled
- **Printing pressure:** from 4 to 24 kg
- **Board snap-off**: Programmable speed and excursion
- **Fiducial**: Board and frame fiducial search
- **Board support**: support pins and vacuum (option)
- **Changeover time**: less than 5 minutes
- **Cycle time**: 18-25 sec (depending on squeegees movement)
- **Compressed air supply:** 6 bar
- **Max consumption**: 60 l/min
- **Power supply**: 230 Volt
- **Max power consumption**: lower than 1 kW
- **Dimensions:** 2080x1130x1475 –*2000 with alarm lamp*- mm (Depth x Width x Height)
- **Net weight:** 285 Kg
- **Packaging (wood):** 2250x1360x1560 mm. (Depth x Width x Height)
- **Gross weight:** 370 kg

SCREEN PRINTER SR2500



Ref. code: UXSR2500

The TWS Automation SR 2500 is an ergonomically designed, air-assisted, bench top stencil printer for high quality printing.
The screen printer SR 2500 gives superior quality printing, at a low cost , and it is extremely easy to use.

Main features are:
-Adjustable snap-off speed, which ensure smooth separation between the stencil and the board, thus improving the paste release from the stencil. The table vertical motion is pneumatically controlled by a front panel switch.
-Double squeegee head, with pneumatic print pressure regulation. The squeegee head is operated by pulling or pushing an handle and it's guided by two rails. Two printing modes: flood-print and print-print. Squeegee angle may be independently adjusted.
-350 mm metal blade squeegees.
-Universal tooling table, to accept any kind of board including double-sided boards. Tooling pins provided.

On request, the following optional items can be supplied:

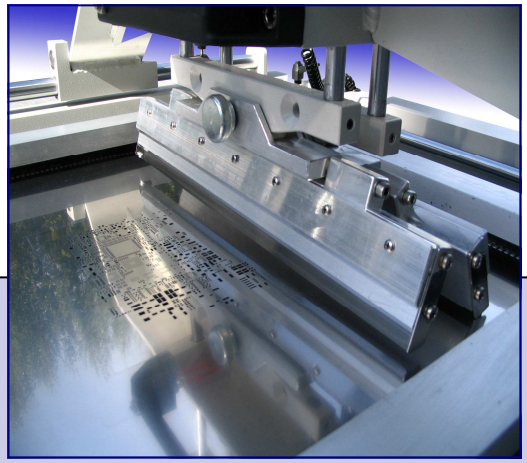
250 mm adjustable metal blade **(ref. code: US2500250R)** or polyurethane squeegee **(ref. code: US2500250P)**

400 mm adjustable metal blade **(ref. code: US2500350R)** or polyurethane squeegee **(ref. code: US2500350P)**

Vacuum kit for blocking PCB **(ref. code: UKITVACUM)**

Frame TWS30 **(ref. code: UTWS030)**

Frame TWS100 **(ref. code: UTWS100)**



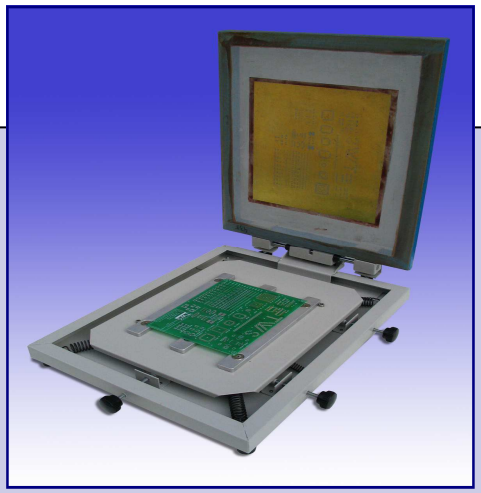
TECHNICAL SPECIFICATION

- **Print area:** 422x422 mm.
- **Maximum frame size:** 650x545 mm
- **Compressed air supply:** 4/6 bar
- **Max consumption**: 30 l/min
- **Dimensions:** 880x900x600 mm (Depth x Width x Height)
- **Net weight:** 80 Kg
- **Packaging (wood):** 2250x1360x1560 mm. (Depth x Width x Height)
- **Gross weight:** 105 kg

SCREEN PRINTER SR2000

The SR 2000 manual screen printer is an entry-level basic tool that, with some care, can do an excellent job. It enables you to print at lowest cost, being at the same time precise and extremely easy to use with X, Y and Theta adjusting knobs.
The SR 2000 has been designed to be easily transported and to fit any worktable. Its particular design and its simplicity ensure reliability and durability.
The boards are fixed on the workplate by tooling pins.
SR 2000 is also equipped with a magnetic fixture kit , allowing to print any kind of double sided board.
SR 2000 screen printer fits perfectly with TWS 30 frame (available as optional).

Ref. code: UXSR2000KM



TECHNICAL SPECIFICATION

- **Maximum frame size:** 570x470 mm
- **Maximum PCB size:** 500x400 mm
- **Print area:** 500x400 mm with forex workplate, 295x340 mm with magnetic workplate.
- **Dimensions:** 520x660x140 mm (Depth x Width x Height)
- **Net weight:** 14 Kg
- **Packaging :** 540x680x220 mm. (Depth x Width x Height)
- **Gross weight:** 16 kg

STENCIL STORAGE CABINET TWS52

All of your stencils can be easily and quickly filed in the TWS-52 stencil cabinet. It is possible to store up to 130 stencils and each of them is easily identifiable thanks to the specific labels placed over the stencil storage racks.
Each cabinet can be fixed to the next one safely and quickly, to form a high capacity storage rack.
40 racks are included (to store up to 80 stencils). Further racks can be ordered as option.
ref. code:HO52A113 (rack 580x530 mm)
ref.code:HO52A115 (rack 620x615 mm)
The rack can contain two stencils and it is supplied with all the necessary parts (support, labels)

Ref. code: UTWS52

TECHNICAL SPECIFICATION

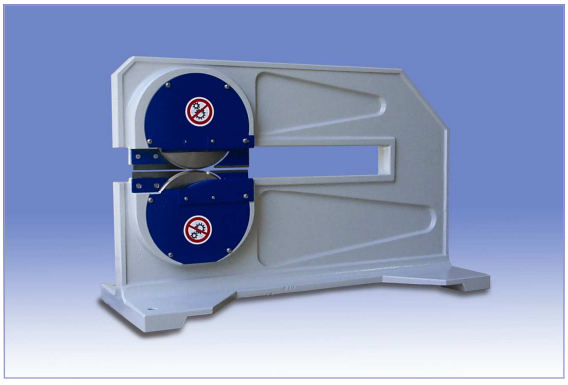
- **Storage capacity:** up to 130 stencils
- **Maximum PCB size:** 500x400 mm
- **Dimensions:** 790x800x750 mm (Depth x Width x Height)
- **Net weight:** 75 Kg
- **Packaging :** 835x835x590 mm. (Depth x Width x Height)
- **Gross weight:** 86 kg

DEPANELLING DM500

Ref. code: UXTWS500

The Depanelling machine DM 500 allows easy and safe separation of panellised scored boards without damaging delicate SMD components.
Compared to other depanelling systems the DM 500 has the advantage that the blade height is adjustable. It is not necessary to change the blades when they loose their sharpness, instead you can regulate them in height, avoiding expensive blade replacement. The blade is driven by operating a foot pedal , avoiding any risk of accident.
The special design of the DM 500 makes it possible to depanel PCBs with tall components very close to the scoring line.

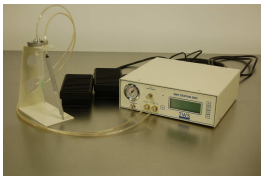
The blade speed can be adjusted at any time and it stops immediately when the pedal is released.



TECHNICAL SPECIFICATION

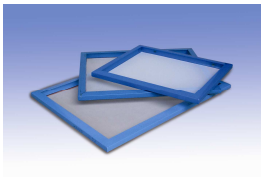
- **Power supply:** 110 Volt-230 Volt
- **Power consumption:** 200 Watt
- **Maximum separation length:** 400 mm
- **Disc diameter:** 150 mm
- **Dimensions:** 350x700x450 mm (Depth x Width x Height)
- **Net weight:** 37 Kg
- **Packaging:** 380x720x500 mm. (Depth x Width x Height)
- **Gross weight:** 40 kg

ACCESSORIES



SMT300 MANUAL DISPENSING STATION
Include vacuum pen handling components and syringe to dispense glue and solder paste.
Programmable timer operated by footswitch or manually

REF.CODE: UX0SMT0300

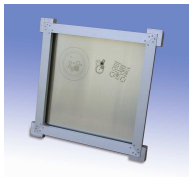


TWS30 POLYESTER MESH FRAME
550X440 mm
Also glue and hardner can be purchased

REF.CODE: UTWS030

TWS200 SELF-TENSIONING FRAME
It tights two sides of the stencil and may accomodate many sizes of stencils.
Dimension: 542x660 mm
Working area: 450x480 mm

REF.CODE: UTWS200



TWS100 SELF-TENSIONING FRAME
It tights four sides of the stencil and may accomodate many sizes of stencils.
Dimension: 542x542 mm
Working area: 422x422 mm

REF.CODE: UTWS100

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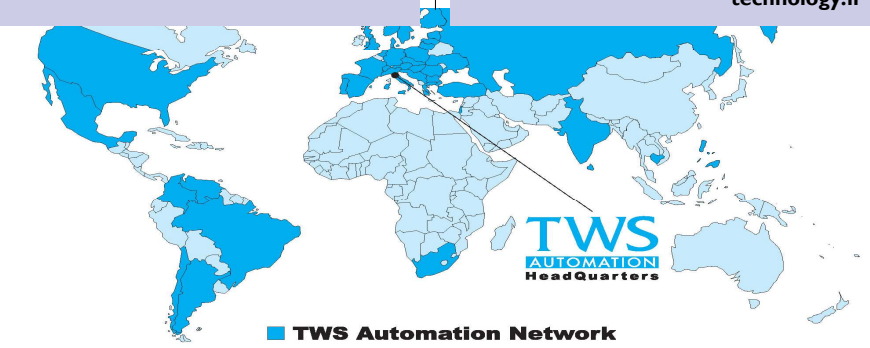

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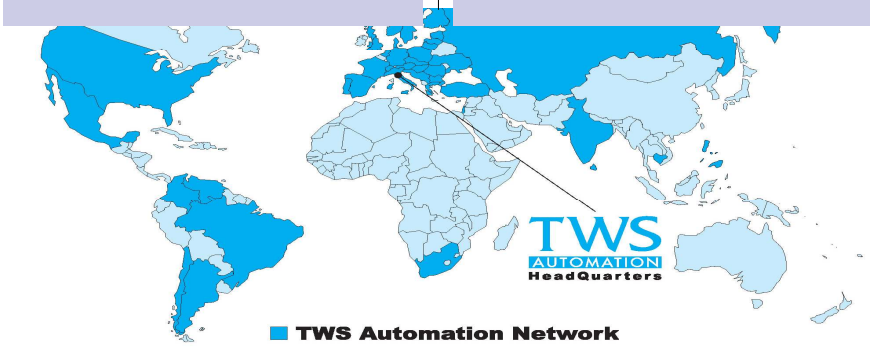

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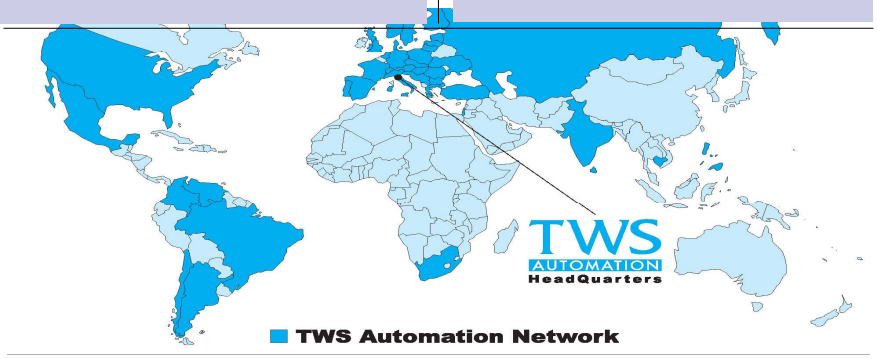

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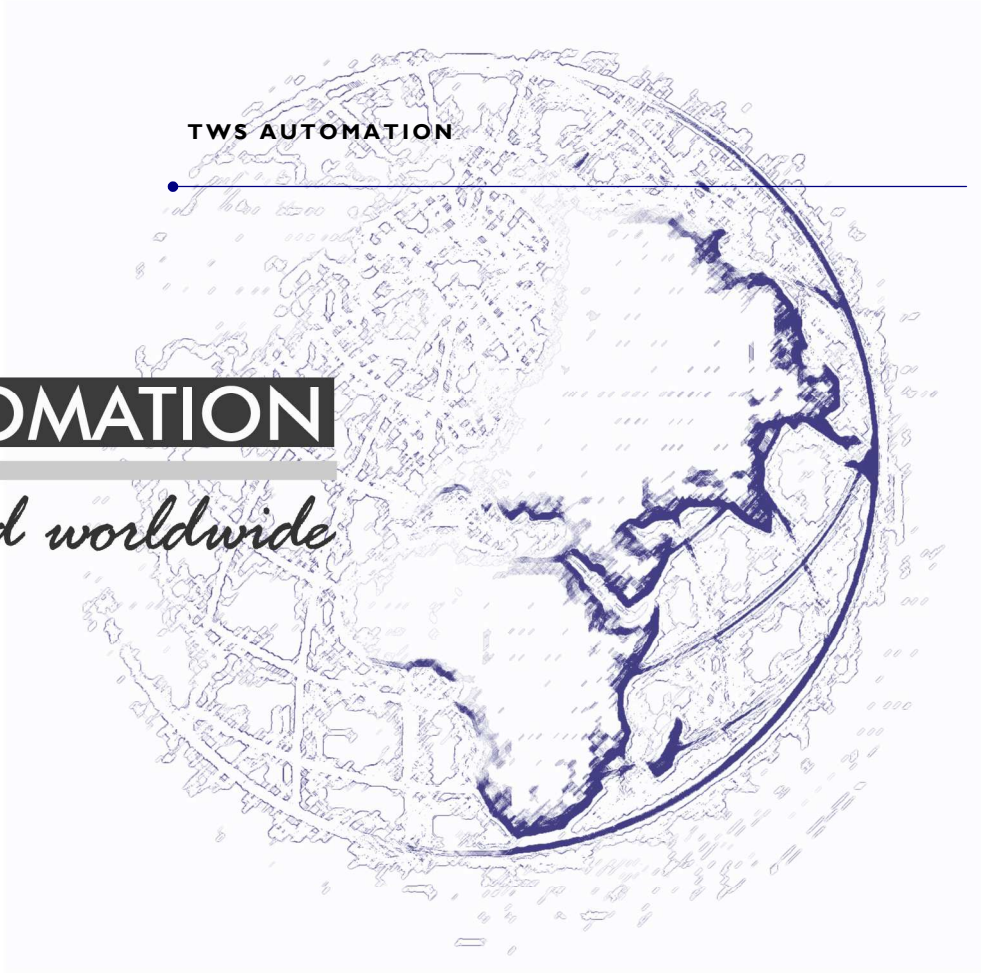

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